12-GeV Software Review
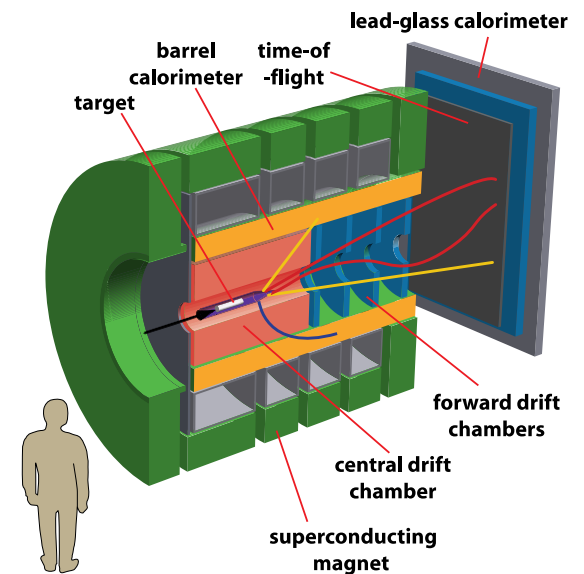
The GlueX Collaboration
GlueX/Hall-D
Curtis Meyer, Spokesperson
GlueX

Collaboration Organization
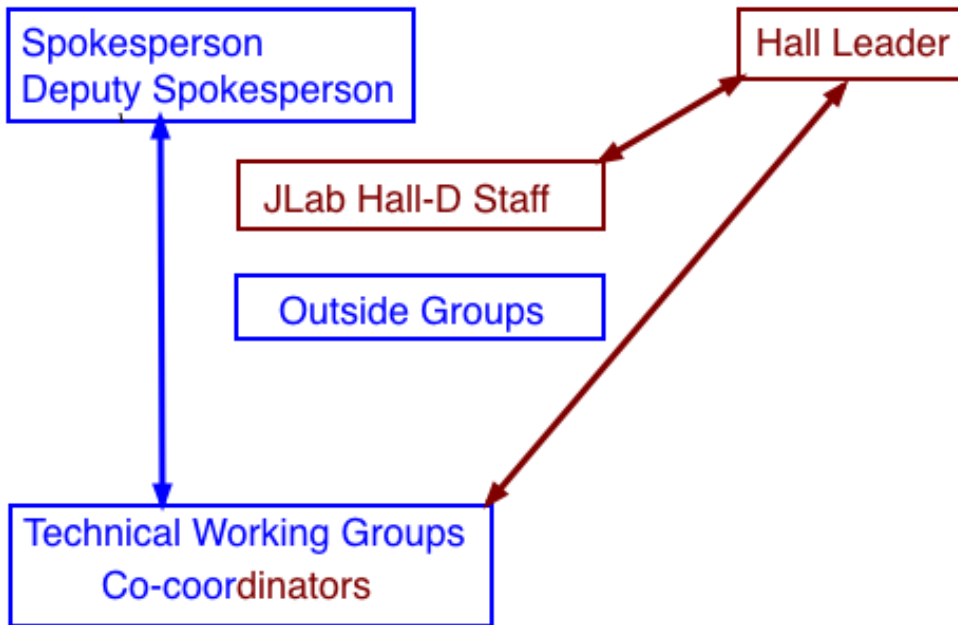
Reconstruction software is nominally handled in the offline WG. DAQ issues are handled in the Online WG

The Physics WG has been pursuing full physics analysis of events for nearly 18 months.

Geant -> Reconstruction -> PWA

The efficiency of the tracking software has moved into the tracking WG.

Calibration issues are handled in the relevant WGs.

GlueX Offline Analysis

- **Event generators for both physics events and realistic backgrounds exist. (PYTHIA based hadronic physics.)**

- **Full Geant3 based Monte Carlo can process these events. This currently runs on the Open Science Grid (OSG).**

- **Full reconstruction of tracks and photons including PID runs on these data samples. Full event have efficiencies a factor of 2-3 smaller than expected, and we still have holes with specific regions of phase space. We also do not fully understand our reconstruction errors and correlations yet, so kinematic fitting is a bit problematic.**

- **These events are run through amplitude analysis codes to exercise partial wave analysis.**

$$\gamma p \to X[2^{+-}](2000)p$$

$$X \to b_1(1235)\,;\ b_1 \to \omega\pi\,;\ \omega \to \pi^+\pi^-\pi^0$$

$$\gamma p \to p2\pi^+2\pi^-\pi^0\,;\ p\pi^+\pi^-3\pi^0$$

- **Event display of a b1-pi event**

To do list for the 2015 engineering run

- **Improve the overall efficiency of reconstruction.**

- **Define the overall DST format with input from physics.**

- **Setup our calibration and alignment procedures and codes.**